Remarks/Arguments:

Claims 36 and 37 have been amended. Claim 67 has been added. No new matter is introduced herein. Of pending claims 10-23, 25-63, 65-67, claims 10, 12, 14, 16, 17, 20, 22, 38-63, 65 and 66 have been withdrawn.

Applicants appreciate the courtesy extended to their representatives during the telephone interview of December 10, 2009. During the course of the interview, Applicants' representatives discussed differences between Applicants' claim 11, Gruzdev et al. (US 6,868,179) and Curry et al. (US 2004/0051908). The Examiner agreed that Gruzdev et al. do not teach a color correction instrument that separately applies each of a first color correction and a second color correction to a respective pixel when a predetermined color component is detected in the chrominance signals corresponding to the pixel. In addition, the Examiner agreed that there is no motivation to combine Gruzdev et al. and Curry et al.

Claims 36 and 37 have been amended to correct typographical errors. No new matter is introduced herein.

Claims 11, 15, 18, 23, 25, 26, 31, 33, 34, 36 and 37 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Gruzdev et al. (U.S. 6,868,179) in view of Curry et al. (US 2004/0051980), Sakata (US 5,428,385) and Higgins (U.S. 7,176,935). Reconsideration is respectfully requested for the reasons set forth below.

Claim 11 includes features neither disclosed nor suggested by the cited art, namely:

> ... a color correction instrument which applies, to at least one of the pixels, <u>each of a) a first color correction</u> ... to form a first corrected chrominance signal <u>and b) a second color correction</u>... to form a second corrected chrominance signal, <u>when a predetermined color component is detected</u> in said chrominance signals corresponding to said at least one pixel ...
>
> ... a height generation instrument which generates, when <u>a region of adjacent pixels having said predetermined color component</u> is detected, a saturation height difference for the pixels in said region

> by assigning each of said first corrected chrominance signal and said second corrected chrominance signal to the pixels of said region according to a predetermined assignment pattern, the predetermined assignment pattern alternating said first and second corrected chrominance signals over one or more of said pixels ... (Emphasis Added)

Claims 23 and 25 include similar recitations.

Gruzdev et al. disclose a method of correcting image saturation in a chromaticity color space. Saturated colors are defined and an overall correction of the saturation of colors in the image is performed using a table of corrections. (Abstract). An optimal saturation is defined using an average color ratio, R, for all colors in a high saturation region. (Col. 6, line 62 - Col. 7, line 37). Gruzdev et al. also teach using different color tables for "normal" colors and for predetermined color ranges (e.g., sky colors, grass colors, skin tone colors, etc.). (Col. 7, line 60 - Col. 8, line 17). Gruzdev teaches calculation of overall image chroma scale factors. For every pixel with a high chroma color, a chroma scale factor is computed using one value from a table. The scale factor is then averaged to give one overall value for the whole image. A separate table is used for normal colors and skin tone colors. (Col. 9, lines 32-53).

At Column 7, lines 39-59, Gruzdev et al. teach generating a saturation correction factor F which multiplies the original saturation of pixels of interest in the image. At Column 8, lines 18-43, Gruzdev et al. teach that saturation correction can be performed in a non-linear fashion, as shown by the saturation equation S_l (Column 8, line 34). The saturation correction equation at Column 8 performs a linear or non-linear modification of the saturation based on the exponent and multiplies the modified saturation by correction factor F. The saturation correction can be linear (when the exponent is unity) or non-linear (for exponent values other than unity). Accordingly, when the exponent is unity, saturation is corrected by saturation correction factor F, as described at Column 7, lines 39-59, of Gruzdev.

As acknowledged by the Examiner on p. 3 of the Office Action, Gruzdev et al. do not disclose or suggest a color correction instrument that forms each of a) a first corrected chrominance signal to increase saturation of a chrominance signal by decreasing a value of the chrominance signal and b) a second corrected chrominance

signal to increase a white color component of the chrominance signal by increasing the value of the chrominance signal, as required by claim 11. In addition, as acknowledged by the Examiner on page 4 of the Office Action, Gruzdev et al. do not disclose or suggest a display apparatus which receives chrominance signals and includes pixels configured to display four colors, as required by claim 11.

During the course of the telephone interview, the Examiner asserted that Gruzdev et al. teach performing two corrections to a pixel, based on Column 7, lines 39-59, and Column 8, lines 18-43, respectively. Applicants respectfully disagree. Applicants note that Column 7 teaches multiplying saturation correction factor F with the original saturation, <u>for a linear correction</u>. Column 8, lines 18-43 of Gruzdev et al. teach <u>non-linear</u> saturation correction, where saturation correction factor F is multiplied with the saturation modified in a linear or non-linear fashion. However, there is <u>no teaching</u> in Gruzdev et al. to first perform saturation correction as described at Column 7 and then apply a further correction to the same pixel using the non-linear equation shown at Column 8. Indeed, when the exponent equals unity, the saturation is corrected as described at Column 7, lines 38-59. Gruzdev et al. are silent regarding a color correction instrument which applies, to at least one of the pixels, each of a first color correction and a second color correction when a predetermined color component is detected in the chrominance signals corresponding to the pixel, as required by claim 11.

Furthermore, as acknowledged by the Examiner on page 3 of the Office Action, Gruzdev et al. do not disclose or suggest a height generation instrument which generates a saturation height difference for <u>a region of adjacent pixels</u> having the predetermined color component, <u>by assigning each of the first and second corrected chrominance signals to the pixels of the region according to a predetermined assignment pattern</u>, as required by claim 11 (emphasis added). Gruzdev et al. only teach: 1) applying an average color ratio correction for colors in a high saturation region using a table and 2) calculation of a single overall image chroma scale factor for normal and skin tone colors. Thus, for a region of adjacent pixels within a color range (normal or skin tone colors), Gruzdev et al. calculate <u>one value</u> for correction. Accordingly, Gruzdev et al. do not include all of the features of claim 11.

Curry et al. disclose, in Fig. 1, de-screener 20 including de-screen modules 30, 40 for filtering out original halftone patterns from a scanned image. (Paragraph [0028]). De-screen module 30 includes filter units 32, 34 for generating respective blurred color signal 58 and reference color signal 44. (Paragraph [0037]). Filter units 32, 34 apply filtering on each color component with chrominance filters. The chrominance filter can be implemented as two alternating filters, for even and odd pixels. (Paragraphs [0045] and [0051-0053]). Curry et al. further teach that the chroma values for the pixels "would be the average of the odd and even cases." (Paragraph [0054]).

Curry et al, however, do not teach a height generation instrument which generates, when a region of adjacent pixels having a predetermined color component is detected, a saturation height difference for the pixels in the region by assigning each of first and second corrected chrominance signals in a predetermined assignment pattern to the pixels of the region, as required by claim 11. Instead, Curry et al. teach that the chroma values for the pixels "would be the <u>average</u> of the odd and even cases" (Paragraph [0054]) (emphasis added). Furthermore, as acknowledged by the Examiner during the telephone interview, there is no suggestion or motivation in either Gruzdev et al. or Curry et al. to combine Curry et al. with Gruzdev et al. Accordingly, Curry et al. do not make up for the deficiencies of Gruzdev et al. with respect to claim 11 and would not be combined with Gruzdev et al.

Sakata discloses that any color can be represented by a vectorial addition of positive fractions of red, green and blue primary colors. Sakata also teaches that to detect the color yellow, an equation based on red, green and blue unit color vectors may be used to define a region of color vector diagram representing yellow. (Col. 5, lines 16-60).

Sakata, however, does not teach a color correction instrument for forming first and second corrected chrominance signals and a height generation instrument which generates a saturation height difference for pixels in a region by assigning the first and second corrected chrominance signals to the pixels of the region according to a predetermined assignment pattern, as required by claim 11. Sakata is silent regarding these features. Thus, Sakata does not make up for the deficiencies of Gruzdev et al. and Curry et al.

Higgins discloses, in Fig. 1, system 100 that provides gamut expansion and/or conversion of chroma components. (Col. 5, lines 18-47). Higgins, however, does not disclose or suggest a color correction instrument for forming each of first and second corrected chrominance signals and a height generation instrument which generates a saturation height difference for adjacent pixels in a region by assigning the first and second corrected chrominance signals to the pixels of the region according to a predetermined assignment pattern, as required by claim 11. Higgins is silent regarding these features. Thus, Higgins does not make up for the deficiencies of Gruzdev et al., Curry et al. and Sakata. Accordingly, allowance of claim 11 is respectfully requested.

Although not identical to claim 11, claims 23 and 25 include features similar to claim 11. Accordingly, allowance of claims 23 and 25 is respectfully requested for at least the same reasons as claim 11.

Claims 15 and 18 include all of the features of claim 11 from which they depend. Accordingly, claims 15 and 18 are also patentable over the cited art.

Claims 26, 36 and 37, although not identical to claim 11 include features similar to claim 11 which are neither disclosed nor suggested by the cited art. Namely, forming each of a) a first corrected chrominance signal to increase saturation of a chrominance signal by decreasing a value of the chrominance signal and b) a second corrected chrominance signal to increase a white color component in the chrominance signal by increasing the value of the chrominance signal. As described above, these features are neither disclosed nor suggested by the cited art. In addition, claims 26, 36 and 37 also include the feature of performing control of color correction so that each of the first and second corrected chrominance signals are alternately displayed in a predetermined size of plural units over a predetermined region. Neither Gruzdev et al., Curry et al., Sakata, Higgins, nor their combination disclose or suggest these features. Accordingly, allowance of claims 26, 36 and 37 is respectfully requested.

Claims 31, 33 and 34 include all of the features of claim 26 from which they depend. Accordingly, claims 31, 33 and 34 are also patentable over the cited art.

Claims 13, 19, 21, 27-30, 32 and 35 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Gruzdev et al. in view of Sakata, Curry et al. and Higgins and further in view of Okada et al. (U.S. 6,766,052). These claims, however, include all of the features of respective claims 11 and 26 from which they depend. Okada et al. do not make up for the deficiencies of Gruzdev et al., Sakata, Curry et al. and Higgins because they do not disclose or suggest forming each of first and second corrected chrominance signal (as required by claims 11 and 26); generating a saturation height difference for adjacent pixels in a region by assigning each of the first and second corrected chrominance signals to the pixels of the region according to a predetermined assignment pattern (as required by claim 11); or controlling color correction so that each of the first and second corrected chrominance signals are alternately displayed in a predetermined size of pixel units (as required by claim 26). Accordingly, claims 13, 19, 21, 27-30, 32 and 35 are also patentable over the cited art for at least the same reasons as respective claims 11 and 26.

Claim 67 has been added. No new matter is introduced herein. Claim 67 clarifies that the color correction instrument separately applies each of the first color correction and the second color correction to the respective pixel. Basis for claim 67 can be found, for example, at paragraphs [0095] and [0098]; and Fig. 1 of the subject specification. Claim 67 includes all of the features of claim 11 from which it depends and is patentable over the cited art for at least the same reasons as claim 11.

In view of the foregoing amendments and remarks, the above-identified application is in condition for allowance which action is respectfully requested.

Respectfully submitted,

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